WHAT IS CLAIMED IS:

1. A method of treating chemical cellulose pulp from an alkaline pulping process in a chlorine dioxide stage comprising:

(a) in the chlorine dioxide stage, bleaching the chemical cellulose pulp in a first chlorine dioxide step, and adjusting the pH of the pulp in the first chlorine dioxide step so that the final pH of the step is over 4; and then

(b) in the chlorine dioxide stage effecting an acid treatment of the chemical cellulose pulp at a pH of between 2 – 5 and at a temperature of over 80°C.

2. A method as recited in claim 1 wherein (a) is practiced so that the final pH of the first chlorine dioxide step is over 5, and so that hexenuronic acid groups in the pulp substantially do not react with chlorine dioxide.

3. A method as recited in claim 2 wherein (a) is further practiced so that the temperature in the first chlorine dioxide step is over 75°C.

4. A method as recited in claim 2 wherein (a) is further practiced so that the temperature in the first chlorine dioxide step is between about 80 - 100°C.

5. A method as recited in claim 4 wherein (a) is further practiced so that the treatment time in the first chlorine dioxide step is less than 10 minutes.

6. A method as recited in claim 4 wherein (a) is further practiced so that the treatment time in the first chlorine dioxide step is between 30 seconds - 3 minutes.

7. A method as recited in claim 5 further comprising (c) bleaching the chemical cellulose pulp, after (b), in a second chlorine dioxide step.

8. A method as recited in claim 7 wherein (a)-(c) are practiced so that the treatment temperatures in the first chlorine dioxide step, the acid treatment step, and the second chlorine dioxide step, substantially the same.

9. A method as recited in claim 1 further comprising (c) treating the chemical cellulose pulp with chelating agent after (a) and (b).

10. A method as recited in claim 1 wherein (a) is further practiced so that the temperature in the first chlorine dioxide step is over 75°C.

11. A method as recited in claim 1 wherein (a) is further practiced so that the temperature in the first chlorine dioxide step is between about 80 - 100°C.

12. A method as recited in claim 1 wherein (a) is further practiced so that the treatment time in the first chlorine dioxide step is less than 10 minutes.

13. A method as recited in claim 1 wherein (a) is further practiced so that the treatment time in the first chlorine dioxide step is between 30 seconds - 3 minutes.

14. A method as recited in claim 1 further comprising (c) bleaching the chemical cellulose pulp, after (b), in a second chlorine dioxide step.

15. A method as recited in claim 14 wherein (a)-(c) are practiced so that the treatment temperatures in the first chlorine dioxide step, the acid treatment step, and the second chlorine dioxide step substantially the same.

16. A method as recited in claim 4 wherein (a) is further practiced so as to provide a chlorine dioxide dosage of between about 0.5-1.5% active chlorine during the first chlorine dioxide step.

17. A method as recited in claim 7 wherein (a) is further practiced so as to provide a chlorine dioxide dosage of between about 0.5-1.5% active chlorine during the first chlorine dioxide step; and wherein (c) is practiced so as to provide a chlorine dioxide dosage of between about 0.5-2.0% active chlorine during the practice of the second chlorine dioxide step.

18. A method as recited in claim 17 wherein step (b) is practiced at a pH between 2.5-4, a temperature between 90-110°C, and a time between 30-300 minutes.

19. A method as recited in claim 18 wherein (a)-(c) are practiced so that the treatment temperatures in the first chlorine dioxide step, the acid treatment step, and the second chlorine dioxide step, are substantially the same, and between about 90-100°C.

20. A method as recited in claim 19 wherein (a) through (c) are practiced utilizing an acid tower, an inlet line to the acid tower, and an outlet line from the acid tower to a further treatment device; and wherein (a) is practiced substantially completely within the inlet line to the acid tower, (b) is practiced substantially completely within the acid tower, and (c) is practiced substantially completely in the discharge line from the acid tower.

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